

CLAIMS

WHAT IS CLAIMED IS:

1. A process for forming a drag reducing agent comprising a polyalphaolefin and at least one alpha olefin monomer partitioning agent, the process comprising:
 - contacting alpha olefin monomers with at least one catalyst in a reactant mixture, wherein the reactant mixture includes at least one alpha olefin monomer partitioning agent; and
 - polymerizing the alpha olefin monomers, wherein during the polymerization at least a portion of the alpha olefin monomer polymerize in the reactant mixture to provide a polyalphaolefin.
2. The process of claim 1, wherein the at least one catalyst is a transition metal catalyst.
3. The process of claim 2, wherein the transition metal catalyst is a Ziegler-Natta catalyst.
4. The process of claim 3, wherein the Ziegler-Natta catalyst is titanium trichloride.
5. The process of claim 4, wherein the at least one alpha olefin monomer partitioning agent is selected from the group consisting of C_{20} - C_{60} alpha olefin monomers.
6. The process of claim 4, wherein the at least one alpha olefin monomer partitioning agent is at least one C_{30} alpha olefin monomer.
7. The process of claim 1, wherein the reactant mixture includes at least one co-catalyst.
8. The process of claim 7, wherein the at least one co-catalyst is selected from the group consisting of alkylaluminoxanes, halohydrocarbons, diethylaluminum chloride, and dibutylaluminum chloride.

- 1 9. The process of claim 1, wherein the at least one alpha olefin monomer partitioning agent is
2 selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.
- 1 10. The process of claim 1, wherein the at least one alpha olefin monomer partitioning agent is
2 at least one C₃₀ alpha olefin monomer.
- 1 11. A drag reducing agent comprising a polyalphaolefin and at least one alpha olefin monomer
2 partitioning agent.
- 1 12. The process of claim 11, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.
- 1 13. The process of claim 11, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.
- 1 14. A drag reducing agent comprising a polyalphaolefin and at least one alpha olefin monomer
2 partitioning agent formed by contacting alpha olefin monomers with at least one catalyst in a reactant
3 mixture having at least one alpha olefin monomer partitioning agent, and polymerizing the alpha
4 olefin monomers, wherein during the polymerization at least a portion of the alpha olefin monomers
5 polymerize in the reactant mixture to provide a polyalphaolefin.
- 1 15. The process of claim 14, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.
- 1 16. The process of claim 14, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.

1 17. A drag reducing agent comprising a polyalphaolefin and at least one alpha olefin monomer
2 partitioning agent formed by contacting alpha olefin monomers with at least one catalyst in a reactant
3 mixture, polymerizing the alpha olefin monomers, wherein during the polymerization at least a
4 portion of the alpha olefin monomers polymerize in the reactant mixture to provide a
5 polyalphaolefin, and mixing the polyalphaolefin with at least one alpha olefin monomer partitioning
6 agent.

1 18. The process of claim 17, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.

1 19. The process of claim 17, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.

1 20. A process for reducing drag in a conduit, comprising:
2 forming a drag reducing agent comprising a polyalphaolefin and at least one alpha olefin
3 monomer partitioning agent, wherein the drag reducing agent is formed by contacting
4 alpha olefin monomers with at least one catalyst in a reactant mixture having at least
5 one alpha olefin monomer partitioning agent, and polymerizing the alpha olefin
6 monomers, wherein during the polymerization at least a portion of the alpha olefin
7 monomers polymerize in the reactant mixture to provide a polyalphaolefin; and
8 introducing the drag reducing agent into the conduit.

1 21. The process of claim 20, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.

1 22. The process of claim 20, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.

1 23. A process for reducing drag in a conduit, comprising:

2 forming a drag reducing agent comprising a polyalphaolefin and at least one alpha
3 olefin monomer partitioning agent, wherein the drag reducing agent is formed
4 by contacting alpha olefin monomers with at least one catalyst in a reactant
5 mixture, polymerizing the alpha olefin monomers, wherein during the
6 polymerization at least a portion of the alpha olefin monomers polymerize in
7 the reactant mixture to provide a polyalphaolefin, and mixing the
8 polyalphaolefin with at least one alpha olefin monomer partitioning agent;
9 and
10 introducing the drag reducing agent into the conduit.

1 24. The process of claim 23, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.

1 25. The process of claim 23, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.

1 26. A process for forming a drag reducing agent comprising a polyalphaolefin and at least one
2 alpha olefin monomer partitioning agent, the process comprising:

3 contacting alpha olefin monomers with at least one catalyst in a reactant mixture;
4 polymerizing the alpha-olefin monomers, wherein during the polymerization at least
5 a portion of the alpha olefin monomers polymerize in the reactant mixture to provide a
6 polyalphaolefin; and
7 mixing the polyalphaolefin with at least one alpha olefin partitioning agent.

1 27. The process of claim 26, wherein the at least one alpha olefin partitioning agent is selected
2 from the group consisting of C₂₀ - C₆₀ alpha olefin monomers.

1 28. The process of claim 26, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C₃₀ alpha olefin monomer.

1 29. The process of claim 26, further comprising the step of cryogrinding the polyalphaolefin and
2 at least one alpha olefin partitioning agent.

1 30. The process of claim 29, wherein the at least one alpha olefin monomer partitioning agent
2 is selected from the group consisting of C_{20} - C_{60} alpha olefin monomers.

1 31. The process of claim 29, wherein the at least one alpha olefin monomer partitioning agent
2 is at least one C_{30} alpha olefin monomer.